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ABSTRACT

This study examines the interlibrary loan requests made to NEOUCOM's (Northeastern Ohio Universities College of Medicine) Oliver Ocasek Regional Medical Information Center in Rootstown, OH from its associated council hospital libraries. A total of 636 interlibrary loan requests from the period July 1994-July 1995 were analyzed. Components of the interlibrary loan form assessed were the requesting hospital; the type, year, and subject of the material requested; time it took to fill the request; if the request was filled on or before the day it was needed; and the type of patron requesting the material. Interlibrary loan requests from the hospital libraries to the Information Center were filled in a short amount of time, and all of the requests analyzed were filled on or before the day they were needed, except one. Three hospitals had the most interlibrary loan requests. Overall characteristics of the most requested type of item were: generally an article from a journal, dated from 1980-1995, and dealing with preclinical sciences. Of the patrons identifying themselves on the interlibrary loan form, 40% were doctors. A profile of each hospital compiled from the study findings is provided. Appendices include a list of Council of Associated Hospital libraries; sample interlibrary loan form; coding sheet; and National Library of Medicine classification sheet. (Contains 20 references.) (Author/SWC)

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AN ANALYSIS OF INTERLIBRARY LOAN REQUESTS MADE TO THE NEOUCOM INFORMATION CENTER FROM ITS ASSOCIATED COUNCIL HOSPITAL LIBRARIES: MAXIMIZING SERVICE TO HOSPITAL LIBRARIES IN THE ERA OF HOSPITAL DOWNSIZING

A Master's Research Paper submitted to the
Kent State University School of Library and Information Science
in partial fulfillment of the requirements for the degree Master of Library Science
by

Kristine M. Gonda-Farley

October 1996

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Master's Research Paper by

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This is a study of the interlibrary loan requests made to NEOUCOM's (Northeastern Ohio Universities College of Medicine) Oliver Ocasek Regional Medical Information Center in Rootstown, OH, from its associated council hospital libraries. The period of the requests looked at was from July 1994 - July 1995, and the components of the request forms that were analyzed were the requesting hospital; the type, year, and subject of the material requested; time it took to fill request; if the request was filled on or before the day it was needed; and the type of patron requesting the material.

A total of 636 requests were entered into the Kent State University's IBM mainframe database. Frequency and crosstab analyses were conducted to determine which libraries made the most requests, what were the most and least requested types of materials and subjects, what years were most frequently requested, what kind of patron was the most and least prevalent requester, what years and kinds of materials and subjects each library requested the most and least, an average of how long it took for the Information Center to fill the requests, and how often the Information Center filled a request before or by the time it was needed. Chi square analysis was also done. The results were described and presented in table format.

The study found that interlibrary loan requests from the hospital libraries to the Information Center were filled in a short amount of time, and all of the requests analyzed were filled on or before the day they were needed, except one. There were three hospitals in particular that had the most interlibrary loan requests, and overall the most requested item was generally an article from a journal, from 1980-1995, dealing with preclinical sciences. Of the patrons identifying themselves on the interlibrary loan form, 40% were doctors. Each hospital's interlibrary loan request profile was presented, with the suggestion for the NEOUCOM Information Center to make updates or changes based on each hospital's need.

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I. INTRODUCTION

Hospitals are fighting for their lives these days. The trend for survival in the era of managed care seems to be for hospitals to be developing alliances with one another, physician groups, HMOs, insurers, and nursing homes.[1] As well, the health insurance companies are being bought out by for-profit companies. In March 1996, Columbia/HCA Health Corporation, the nation's largest for-profit chain, which has been buying out hospitals left and right, offered to purchase most of Ohio's largest insurer, Blue Cross and Blue Shield. This could lead to Columbia/HCA Health Corporation being the most powerful medical company in Ohio, forcing competitors to match its low prices and wide range of services. Fears voiced about this kind of system are that a non-profit hospital would have a centralized focus on direct patient care, whereas a for-profit corporation would balance the needs of patients with stockholders.[3] And what does that mean for hospitals? Downsizing. And what does downsizing mean for hospital libraries? Possible shutdown, and, at the very least, major cutbacks.

Despite the merger frenzy, a call for reform in hospitals and medical care is not something that has happened overnight. The insurance industry has played a large role, but other components include the recession in the early and mid-1990s, a shortage of patients in some hospitals, and generally increasing costs.[4] As a result, hospitals are trying to restructure the way they do business, including downsizing and decentralizing, shifting of

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roles and work redesign, and developing health care networks.[5]

This will result in changes in the way hospital libraries operate, but this also has not just happened overnight. In 1985, Friedman said that the "medical library is an institution in a state of flux. It is an institution which will emerge from the next decade more radically changed than during any time in its history."[6]

Friedman notes that the major problems in medical libraries include escalating costs of materials, medical library positions being eliminated, and hospitals' focus on cost containment, which inevitably affects components of the library such as space, acquisitions and personnel costs.[7]

In Ohio, there is a group called the Council of Associated Hospital Librarians, whose members are from the Oliver Ocasek Regional Medical Information Center (OORMIC) at the Northeastern Ohio Universities College of Medicine (NEOUCOM) in Rootstown, Ohio and fourteen hospital libraries in the Akron - Youngstown area, which are teaching hospitals for NEOUCOM. The Council includes the chief medical librarian at the Information Center and the chief medical librarian of each associated teaching hospital. The Council makes recommendations to the Dean about library resources and educational services at all the teaching hospitals. (See Appendix A for Council membership.)

The associated teaching hospitals are also networked with OORMIC; their holdings are included on the NEOLINK catalog, and for the ones who are members of OHIOLINK, on the OHIOLINK system, under the heading for "NEOUCOM." The associated teaching hospitals also count on OORMIC for interlibrary loan services. Organizations like networks, consortiums, and cooperative groups save money, and they also facilitate sharing of resources and establishing new solutions. Also, because of the trends in healthcare, the emerging focus seems to be promotion of health and less focus on costly options like hospitalization.[8] So, despite downsizing and cost-cutting in hospitals, perhaps the hospital

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library will have a place in the new focus on wellness as the prime disseminator of health information. If that is the case, an organization like the Council should plan appropriately for the effective and timely sharing of information. Specifically, as a main resource provider, OORMIC should be able to anticipate and fill its associated hospital libraries' needs. One way of measuring this is looking at the interlibrary loan services OORMIC provides to these associated libraries.

This idea of hospital libraries being a force for education is not a new idea; nor is the idea of hospital reform. More than twenty years ago, the West Suburban Hospital Research and Education Association in Massachusetts did a study on hospital consortia and noted that

> the hospital's assumption of educational leadership comes at a time when hospitals are being criticized for inefficiencies in health care services and for the rising cost of health care and education. To dispel these criticisms, hospitals will have to seek alternative approaches to organizing educational and informational resources. [9]

Of course, if hospital libraries are to take the lead now in justifying their existence by promoting their efficacy as premier providers of health information, it will not be a surprise that they will be asked to provide top-notch services with a shrinking budget. As Silverstein pointed out, health science libraries are under pressure to provide more services with fewer resources.[10] Despite having fewer resources, health science libraries still have to keep up with technological advances and new ways of getting and disseminating resources.

Silverstein's study noted that health care professionals are not able to keep up with the influx of health and medical information and would like to have a better and more convenient way to access library services. She provided an extensive list of recommendations to hospital librarians in the areas of access and availability, services and resources, visibility and public relations, and infrastructure and support systems.[11]

One of her recommendations was to develop a timely and coordinated system for sharing resources and information. Journal collections could be developed at certain sites

and thereby "expand the scope of resources and skill development within the pool of libraries while reducing cost and duplication of effort."[12]

With the development of journal collections at other sites comes a need for timely and accurate interlibrary loan services between libraries. Hill pointed out the importance of the interlibrary loan department, and calls it a fascinating job in health sciences librarianship. "Interlibrary loan is the most varied, fast paced, and often the most analytically and diplomatically demanding area of all public service positions."[13] Interlibrary loan librarians have to be aware of computerization, networking, automation, information access issues, how interlibrary loan interrelates with references services, and a general idea of acquisition and the development of collections.

Hence, an understanding of interlibrary loan services can lead to an understanding of the importance and effects of many other library services. As Dalrymple said, "the ILL [interlibrary loan] data serve as a benchmark for setting operational and service objectives in the resource sharing area."[14]

Purpose of the Study

The purpose of this research paper is to determine the needs of OORMIC associated hospital libraries and if OORMIC is meeting their needs through an analysis of OORMIC's interlibrary loan service. A study such as this has not been done before, and because of the difficulties hospital libraries are facing today, as well as OORMIC's status as a resource library in the region, it is appropriate to consider how a networked consortium, such as the Council, can best utilize its resources to benefit the hospital library members.

Definitions of Terms

Interlibrary loan (ILL) - The request for materials from one library to another, the requester library will not have these materials in its collection.

Network - A group of libraries that are linked electronically or by computer.

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Resource Sharing - The practice between libraries to cooperate in areas such as serials lists collection development, interlibrary loan, cataloging, etc.

Consortium - A group of libraries with the same aim and ideas, which may share resources, like interlibrary loan and cataloging activities. A group of libraries can be a consortium without being a network.

NEOLINK - The online catalog of the Oliver Ocasek Regional Medical Information Center (OORMIC) at the Northeastern Ohio Universities College of Medicine (NEOUCOM).

OHIOLINK - Integrated online catalog system that also includes an online borrowing system, research database, and document delivery services, serving forty-three institutions in Ohio.

Limitations

The results of this study are limited to the interlibrary loan services provided by the Oliver Ocasek Regional Medical Information Center to its associated hospital libraries, within the Council of Associated Hospital Librarians, for the period of July 1994 - July 1995. While the specific results of interlibrary loan services are not necessarily generalizable to all hospital libraries, hopefully the conclusions made regarding the results could be applicable for consideration in improving services in medical and hospital library networks and consortiums.

Another limitation of this study is the clarity, completeness, and accuracy of the information provided on the request forms that will be analyzed (see Appendix B, Sample interlibrary loan form). Most of the forms are typewritten or have been printed out by computer, but some have been handwritten and are difficult to read. Also, the title as listed on each form is rarely complete, which has lead to some guessing on the part of the researcher as to the true subject of the article. The name of the patron who requested the article does not always include his or her title, so an accurate reading as to what kind of health practitioner is requesting these articles was difficult to get.

II REVIEW OF THE LITERATURE

The review of the literature includes articles on the effectiveness of interlibrary loan services in specific settings, as well as discussions of networks and resource sharing, and how interlibrary loan services should be used within that kind of framework. It is interesting to have observed that most of the articles that discussed interlibrary loan services in a specific setting were usually upbeat if not at least optimistic about how interlibrary loan is a beneficial service, whereas the articles that discussed interlibrary loan in relationship to networks and resource sharing focused extensively on the negative aspects of the system and how it would need to be changed to survive in the library of the future.

In order to understand the functions, effectiveness, and outcomes of interlibrary loan, several studies of interlibrary loan systems were reviewed. A survey of interlibrary loan requests from the National Library of Medicine between 1959 and 1984 was done by Lacroix who noted that the highest use of the serials collection was for materials published after 1950 [15] which is not surprising considering that, except for historical perspective, the most desirable medical information is the more recent. She also noted that, in the past, the most frequently requested titles included the *Journal of the American Medical Association* and the *New England Journal of Medicine*, but more common in later years were requests for foreign titles not usually held in health science libraries in the United States.[16]

In 1985, the National Library of Medicine instituted its automated interlibrary loan request routing and referral system, called DOCLINE, which routs requests to local and regional libraries. The National Library of Medicine encourages use of local

resources first, and sees itself as a last resort for interlibrary loan. Lacroix compared the interlibrary loan requests on DOCLINE in 1984 and 1987. She concluded that interlibrary loan requests increased 35% from 1984 to 1987, due to the quickness of DOCLINE and its ease of use. But, also, the fill rate declined 11%, which Lacroix attributed partially to requests that the National Library of Medicine did not fill because the borrowing libraries did not want to pay the Library's fee for filling the loan.[17]

The journals most requested in 1987 included the *Italian Journal of Neurological Sciences*, *Journal of Nursing Staff Development*, *Australian Clinical Review*, *Asia-Oceania Journal of Obstetrics and Gynecology*, *Nursing Standard* and others.[18] As observed from this and the previous study, many of these journals were foreign titles, but also many of them were nursing journals.

It is also interesting to note why loan requests were not filled. The top five reasons Lacroix noted for 1987 were that the cost exceeded the borrowers limit, the title was not on the shelf, the title was not owned, the piece was not owned, and the citation was incomplete or incorrect.[19] The most frequently requested titles in 1987 not owned by the National Library of Medicine included *Business Insurance*, *NAACOG Newsletter*, *Hospital Purchasing News*, *Risk Management*, *Laundry News*, and others.[20]

Bleeker took his study a step further and used the results from interlibrary loan requests to aid in collection management at his library. He and his associates looked at 60,779 external interlibrary loan requests for journal articles at his medical school library in 1988. They found that more than 50% of the requests were for the most recent two-year period, and 90% of the requests were filled by the past 20-years' worth of journals. This helps staff determine which back copies should be kept and for how long.[21]

They also looked at the 4,157 internal requests received for journals not owned and determined which ones were requested most often. At their library, a Library Advisory Board

then considers such aspects as what department most often requests the title and if their area of research requires it, subscription price, availability in other libraries, coverage by various indexes, editorial board of the periodical, and language of the articles, to determine if it wants to buy the journal.[22]

A study by Lovas and associates of the Pacific Southwest Regional Medical Library Service analyzed how the requesters of items through interlibrary loan used the items once they were obtained and how random factors affected that use. They reasoned that a study like this could serve as a model to see if interlibrary loan services could have an effect on the nation's health care, because of the importance for healthcare providers to get current and accurate healthcare information.[23]

They used a random sample to select the hospital libraries that would receive the survey and how many health personnel at each hospital would receive the survey. The survey was analyzed on the following points: type of requester, purpose and immediate need for items, documents requested and read, information usefulness, relationship of timeliness to the value of the information, relationship of timeliness to immediacy of need, timeliness and elapsed time from request to notification, elapsed time and effect on item value, effect of waiting time and need on item value, and effects of illustrations on information content.

They found that the health professionals surveyed most often requested clinical information, and over 92 % of them read the item that they requested through interlibrary loan. Most respondents found the information in the item useful, and the documents they received that were not used were most often not used because the requester did not have enough time to read the item. Sixty-five percent of the requesters had an immediate need for an item, and in 97% of the responses, the requesters said that they received the item in a reasonable amount of time.[25]

The authors concluded that not only was the interlibrary loan service in this network

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extensively used, it was also effective and efficient, and the materials requesters received through the interlibrary loan service were used by them for health care purposes. Lovas and associates also discussed how document delivery systems such as full text could even further decrease delivery time.[26]

Lacroix also looked at use of the articles requested over a period of time, in this case through the National Library of Medicine's DOCLINE system, as described earlier. Four million interlibrary loan requests that were made for a twenty-four month period ending in 1992 were analyzed, and she found that although many journals were required to fill the requests, there were rarely repeat requests for specific journal articles. Seventy-six percent of the articles were requested only once, 92% of the articles supplied were from English-language journals, 67% of articles were published in the most recent five years, and 85% were published in the most recent 10 years.[27]

Journals most frequently used in 1992 – Lacroix defined "used" as when a title was used to fill a request by a medical library[28]– included *Nursing Times, Annals of the New York Academy of Sciences, Nursing Standard, Journal of Advanced Nursing, Progress in Clinical & Biological Research, Medical Journal of Australia, Spine, Lancet, Social Science and Medicine*, and *JAMA*.[29] The top five journal titles with articles requested more than one hundred times included *Surgical Endoscopy, Drugs, Journal of Psychiatric Research, Health Care Management Review*, and *Family Practice*.[30]

MeSH headings that were appropriate for the most heavily used articles included (1991) "quality assurance, health care," "attention deficit disorder" w/ "hyperactivity," "fatigue syndrome, chronic," and (1992) "fatigue syndrome, chronic," "managed care programs," "laparoscopy," "quality assurance, health care."[31]

Lacroix concluded that the findings raise questions about how cost-effective it would be to convert printed journal articles to electronic form for future storing, because only a small

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number of journals are used heavily for interlibrary loan document delivery. Use of an article is usually only for a few years. She also noted that it would be difficult to predict what articles and journals would be requested most in the future, because "hot topics" seem to change over time.[32]

The actual results of interlibrary loan can be affected by how the data were collected, and Dalrymple and associates reported on designing and testing the data collection process in interlibrary loan.

They analyzed the interlibrary loan process in Illinois libraries and, based on their findings, developed special forms, definitions, and instructions that could be used at all libraries throughout the state, for a more streamlined and effective interlibrary loan process.

Several uses for the data once it was collected were to evaluate, refine, and improve interlibrary loan service; aid in collection development and long-range planning for the library and ILL; assist in fundraising; and show interlibrary loan activity as well as measures of library effectiveness for library users.[33]

Upon reviewing the tools that libraries in Illinois used to gather interlibrary loan data, the researchers found that they were almost too diverse and varied to result in any efficient data gathering and analysis of state-wide practices. A committee composed of librarians from all over the state was set up to determine what were the most important data elements on an interlibrary loan form, how the forms would be evaluated, and how individual libraries could best use the forms.

Data elements on the forms thought to be most important were requests sent and received for known items, materials sent and received for known items, subject referrals sent and received, destination for request or material, and source of requests or materials received. Also of importance were mode of transmission, subject area, and type of material.[34]

Dalrymple and associates noted that the interlibrary loan data collected through the

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process analyzed in this study "can help identify gaps in library collection, describe the library's level of involvement, and illustrate statistically the relationship of the individual library to others in its region, network, or state."[35] Also, "[a]s needs are identified, the ILL data serve as a benchmark for setting operational and service objectives in the resource sharing area."[36]

Although these researchers focused on development of an effective interlibrary loan form, their conclusions were much broader, encompassing interlibrary loan services, the individual library and, ultimately, all the libraries involved in the study, focusing on how effective and powerful resource sharing can be when organized starting from something simple like a form.

Resource sharing and its effectiveness were discussed in several articles, all of which took a precautionary view of the benefits of resource sharing, which is a contrast to the positive impression of interlibrary loan services from the articles reviewed.

Stevens discussed the origins of library networks and how they relate to resource sharing and interlibrary loan. He defined a library network as being a state, multistate, or national library organization that is, among other things, supported by payment for services from supporting libraries as well as being linked online.[37] He cited four main reasons for the start of library networks, including the long tradition of cooperation between American libraries, the development of technology, which enabled automation of library procedures, the growth of research and development of information science, and scientific communication becoming a national concern, starting in the 1960s.[38]

Resource sharing and networks are both components of library cooperation. Stevens said, and interlibrary loan is an aspect of resource sharing. Stevens noted that the national interlibrary loan code was adopted in 1917 based on the assumption that libraries cannot provide to a patron everything that patron might need simply from the library's own

collection.[39] The interlibrary loan system in the United States has since operated in a systematic way, but without a central organizing structure. The system was beginning to show strain, he said, because the demand for interlibrary loans is increasing and many libraries do more lending than borrowing.[40]

Stevens argued that future resource sharing programs should be developed under the network structure, so that many libraries can take full advantage of services like interlibrary loan. Also important for the future is developing programs for libraries that are not only beneficial but also financially feasible.[41]

The effects of using an online system for interlibrary loan were explored by Nitecki in her 1982 article. Local users of a system should promote the reciprocal advantages of resource sharing, she noted, or potential users may not be able to see the benefits of such a system. She stressed that such a system cannot be successful until equity between users is established.

> Each participant in such arrangements must be able to balance benefits with investments. This balance need not be measured in the traditional ILL concept of a shared trade-off of borrowing and lending materials, [but] may take the form... of more selective acquisition, financial support, political leverage, or service commitments that are helpful for obtaining grants.[42]

Kittle and Puffle included the term 'resource rape'[43] in their 1986 article about a conference on library networks held in California in 1985. The term was coined by attendees from large libraries who were tired of the drain on sources because of interlibrary loan, while attendees from smaller libraries asked for more cooperation from the larger libraries.

Kittle provided an interesting description of interlibrary loan problems at his own library. He worked at a small, not-for-profit hospital library which depended on a university health science library for many information needs. Much of his budget went for paying for these services, and he argued that while the funding helps the university library to collect

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items he cannot, he was basically helping to financially support a large university library while being unable to provide services for his own patrons. He also noted that a nearby VA hospital library borrowed from Kittle's library for free but had to pay the university library, while Kittle borrowed from both the university library and the VA hospital library for free. He commented on the absurdity that new hospital libraries like his could not join a local hospital library consortium, but he could join state and federally funded networks as well a the regional library group.[44]

In his 1990 article, Lowry postulated that the network system, with its technology-based focus and premise of catalog and interlibrary loan sharing, promotes use of, but not contribution to, a national library database. This results less in resource sharing and more in shifting of costs, he said.[45]

> Several problems arise in this networking environment because of the underlying assumptions we have about cooperation, and the need for managerial control based on a realistic cost model in our 'not-for-profit industry.' There are also numerous hidden or indirect costs to which no attention is paid as we work towards the abstract ideal of cooperation.[46]

He characterized interlibrary loan as "interlibrary sacrifice," and said that issues looked at to study interlibrary loan services, such as success or fill rate, turnaround time, staff time, equipment costs, and lending charges by utilities, are not adequate enough to determine the real benefits of interlibrary loan or to determine new ways of adding value to the service.[47]

According to Lowry, there are some libraries that are primarily lenders and some that are primarily borrowers, and this makes for inequity in the system, especially on the part of the lenders that lend much more than they borrow.[48] He described how OCLC recognized this problem and its effect on the online union catalog, and decided to implement "contribution pricing," which charged for access to the database, i.e., bibliographic searches and holding

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displays, and gave credit for contributions, i.e., original cataloging, adding/deleting holdings, interlibrary loan lending and requesting. OCLC noted that among the hoped-for benefits were less temptation for a library not to contribute and more incentive for full cataloging and holdings contribution.[49]

Lowry concluded that some system should have been set up long ago to reward participation and contribution in areas such as interlibrary loan and shared cataloging, but these two areas have been the most successful examples of resource sharing between networked libraries, and perhaps they can give guidance for other areas of resource sharing, such as collection development, preservation, and training.[50]

Ballard explored resource sharing in the public library setting in his 1990 look at interlibrary loan practices and their effectiveness. He wrote to all the states between 1984 and 1990 to get interlibrary loan statistics of the public libraries for various years. He received information from thirty-five states and, after analysis of data, concluded that growth of interlibrary loans in public libraries has not been high. And despite enhancements like machine-readable cataloging and union lists in later years, interlibrary loans were more predominant in the early years of the study. He notes that while circulation increased 300 million, interlibrary loan increased only 100 million.[51]

Ballard concluded that resource sharing is

> tied up with the idea of information explosion and the inability of any single library to have anything that might be needed; it assumes collection development is no longer as important as it once was...While many librarians seem to believe that access is no more important than ownership, the data in this article says otherwise by demonstrating that the growth in ILLs was smaller than the growth in circulation.[52]

Ba followed this article with her 1991 look the future of resource sharing. She said that librarians will have to change the role they play in resource sharing, especially considering how much the development and transmission of scholarly research would be transformed by

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technology. Librarians are already focusing on providing access to materials rather than focusing on collecting materials, she said, and she questioned why librarians are so concerned with access when scholars can access the materials themselves in their own offices through technology.[53]

She also described an environment where, as opposed to a researcher getting materials through interlibrary loan, he or she could use the same network to access information, share files, and electronically publish the results. This could lead to little involvement in resource sharing by librarians and result in libraries becoming strictly archives and a place to find just recreational reading.

But Ra questioned the degree of resource sharing and what access to materials electronically really means.

> If I have direct access to the catalogs of Notre Dame, Princeton, Yale, Harvard, Columbia, etc., does this mean I have access to their collections? Does this mean that I know, understand, and accept the carefully negotiated arrangements for economically fair resource sharing that librarians at these institutions have made?[54]

She concluded that librarians should remain involved in the delivery of information, and play a role in maintaining order in the midst of chaos that information technology can cause. She saw the librarian of the future as becoming more involved in electronic scholarship and resource sharing, or strictly becoming "curators" of a traditional library, or even being the bridge between old and new by providing training in new systems. Despite what role the librarian takes, Ra believed that resource sharing will change drastically.[55]

Jackson echoed some of Ra's sentiments in her 1993 article about resource sharing and document delivery. Traditional interlibrary loan will give way to alternative methods of receiving materials, and libraries will not be the only players in providing information with the proliferation of commercial vendors, independent information brokers, and the like. Jackson noted that this change in information delivery is primarily the result of libraries' inability to

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keep up with the demands of their patrons. Reasons she gave for this include increases in publishing, access to information, and patron expectations; and decreasing journal budgets and value of the US dollar.[56]

Libraries are still trying to keep up with the patrons' need, Jackson said, and to this end, they are looking beyond ownership of materials to meet those needs and focusing instead on access. Traditional interlibrary loan services have increased exponentially over the last few years, and libraries have not increased interlibrary loan department staffs, equipment, or software to keep up with this increase. As discussed above, libraries are looking to fill needs in other places than libraries; as well, bibliographic utilities like OCLC and RLG (Research Libraries Group) have developed document delivery ordering systems like Document First, Article First, and CitaDel, which allows the patron to initiate the ordering of materials as opposed to giving their request to the interlibrary loan department. Full-text databases are also being used to supplant traditional interlibrary loan.[57]

With this seemingly overwhelming group of alternative choices for interlibrary loan, Jackson cautioned that some issues should be considered before deciding to use one of them. The ease with which an alternative provider can be selected should be considered, as well as if that process will disrupt workflow. Also for consideration is if staff can be trained to select the most effective provider, if copyright compliance can be maintained, and if the patron will have access to an alternative provider. Jackson also said to keep in mind that alternative suppliers are more effective in providing photocopies of journal articles than in providing books and microfilms.[58]

She concluded that traditional interlibrary loan should be used together with alternative sources, and that the same criteria can be placed on the traditional process as is used with alternative sources.

None of the articles that were reviewed were written specifically about

how one aspect of resource sharing, in this case interlibrary loan, can be developed to strengthen the relationship between the borrowing and receiving libraries, and specifically help to make the borrowing libraries, in this case the hospital libraries, valuable and important information providers for the hospitals, or to help the lending library, in this case OORMIC, improve its services. It is interesting to observe that in the articles, networks and resource sharing are generally not looked upon favorably, but effectively utilizing these systems for information flow and retrieval seems like an obvious way to make a hospital library more important and effective in a hospital administration's point of view.

III.METHODOLOGY

This research study was done using the content analysis method. Specifically, lending requests received by OORMIC from the associated hospital libraries (see Appendix A) between July 1994 and July 1995 were analyzed for amount of lending requests by each library, what kinds of materials were requested, for what year, what the subject of those materials were, how long it took to fill the request, if the request was filled by the time it was needed, and the type of patron that requested the materials. A coding sheet was developed (See coding sheet in Appendix C) and statistical analysis was run.

Trends or patterns in lending requests were observed, as well as the kinds of interlibrary loan demands that OORMIC must meet, and other issues such as who does the most requesting, what kind of requests do they make, and how successful is OORMIC in filling requests in a timely manner. From these observations, conclusions were drawn as to the efficacy of OORMIC's interlibrary loan service, what the hospital libraries' interlibrary loan needs are, and, if necessary, what OORMIC could do to better meet those needs.

The following information was coded for each request: name of hospital of the library making the request, the nature of the material being requested, the year of the material being requested, the subject of the material being requested, the number of days it took to fill the request, if the request was filled on or before the day it was needed, and the type of patron making the request.

The nature of the material requested was divided into six sections: journal article,

monograph, proceedings, thesis, government document, and other. "Other" was considered audiovisual materials and other materials not included in this list.

The subject of the material requested was divided into topics that loosely follow the National Library of Medicine classification system (see Appendix D). The topics are as follows: Preclinical sciences (including anatomy, physiology, biochemistry, pharmacology, microbiology, parasitology, pathology, genetics, immunology, toxicology, and drug therapy); human systems (including the muscoskeletal system, cardiovascular system, digestive system, and nervous system); fields of health and medicine (including public health, epidemiology, the health profession, practice of medicine, family medicine, and nursing); age- and sex-related medical fields (gynecology and obstetrics, pediatrics, geriatrics); medical and related fields (nutrition, psychiatry, radiology, surgery, dermatology, ophthalmology, neurology, anesthesiology, sports medicine, psychology); diseases, syndromes, and conditions; and other. Type of patron included doctor; nurse; other, which could include allied health practitioners; and title not identified.

The data were entered into Kent State University's computer, and frequency and crosstab analyses were conducted to determine which libraries made the most requests, what were the most and least requested types of material and subjects, what years were most frequently requested, what kind of patron was the most and least prevalent requester, what years and kinds of materials and subjects each library requested the most and least, an average of how long it took for OORMIC to fill the requests, and how often OORMIC filled a request before or by the time it was needed. Chi square analysis was also done. These results were described and represented in table format.

IV. RESULTS

A total of 636 requests were entered into the Kent State University's IBM mainframe database. Table 1 shows each consortium library and the frequency and percentage of its interlibrary loan requests for the period of July 1994 - July 1995. The Summa Health System and Akron General Medical Center had the most requests, with Western Reserve Care System not too far behind. The least amount of interlibrary loan requests came from Salem Community Hospital and Woodside Hospital. Both Edwin Shaw Hospital and Massilon Psychiatric Center were not included in any of the tables because of their negligible results.

Table 1.

Frequency and Percentage of Interlibrary Loan Requests for Each Hospital

Hospital	f	%
Aultman Hospital	39	6.1
Western Reserve Care System	101	15.9
Summa Health System	138	21.7
Robinson Memorial	18	2.8
Woodside Hospital	1	0.2
Trumbull Memorial Hospital	5	0.8
St. Elizabeth's Health Center	91	14.3
Salem Community Hospital	3	0.5
Barberton Citizen's Hospital	24	3.8
Children's Hospital Medical Ctr.	64	10.1
Akron General Medical Center	122	19.2
Timken Mercy Medical Center	30	4.7
Total	636	100.0

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The majority of the materials requested were journal articles, which can be seen on Table 2. Government documents, requested only two times, were the least requested. Theses were not included because of their negligible results.

Table 2.
Frequency and Percentage of Type of Material Requested

Type	f	%
Journal Article	584	91.8
Monograph	32	5.0
Proceedings	13	2.0
Government Document	2	0.3
Other	5	0.8
Total	636	100.0

As to the years of most of the articles requested, Table 3 shows that they are generally clustered in 1989 - 1995, with almost 30% from 1992-1993 and almost a quarter from 1994-1995. Pre-1980 requests made up 9.3% of the requests.

The subjects of the materials requested are shown in Table 4. A little over a third of the requests were for the preclinical sciences, with fields of health and medicine, medical and related fields, and diseases, syndromes, and conditions each making up about 16% of the requests. "Other" requests were mostly for library- or business-related materials. Least requested were materials on human systems.

Table 3.

Frequency and Percentage of Year of Material Requested

Year	f	%
1994-1995	157	24.7
1992-1993	188	29.6
1990-1991	112	17.6
1980-1989	120	18.9
Before 1980	59	9.3
Total	636	100.1

Table 4.

Frequency and Percentage of Subject Requested

Subject	f	%
Preclinical Sciences	216	34.0
Human Systems	21	3.3
Fields of Health and Medicine	102	16.0
Age- and Sex-related Medical Fields	42	6.6
Medical and Related Fields	102	16.0
Diseases, syndromes, and conditions	107	16.8
Other	46	7.2
Total	636	100.0

Over half of the requests (66.7%) were filled on the same day, with 22.3% being filled within one day of the request, as shown in Table 5. Only 0.3% of the requests took ten or more days to fill. All requests except one were filled on or before the day they were needed (Table 6).

Of the patrons requesting the materials (see Table 7), over half (52.3%) did not have their titles identified on the interlibrary loan request form, but 40.8% of the requesters were doctors, 1.7% of them were nurses, and 5.2% of them were in the "other" category, which includes hospital librarians, residents, and medical students.

Table 5

Frequency and Percentage of Time it Took To Fill A Request

Time	f	%
Same Day	424	66.7
1 Day	142	22.3
2 to 3 Days	8	1.3
4 to 5 Days	51	8.0
6 to 9 Days	9	1.4
10 or More Days	2	0.3
Total	636	100.0

Table 6

Frequency and Percentage of Request Being Filled on or Before Day Needed

Request Filled on or Before Day Needed	f	%
Yes	635	99.8
No	1	0.2
Total	636	100.0

Table 7.

Frequency and Percentage of Type of Patron Requesting Material

Patron	f	%
Doctor	259	40.8
Nurse	11	1.7
Other	33	5.2
Title Not Identified	332	52.3
Total	636	100.0

The chi square test revealed that there is no significant relationship between individual hospitals and the type of material requested (chi square = 58.187, p = .074, degrees of freedom = 44, sample size = 636). There is, however, a significant relationship between

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individual hospitals and the subject of the material requested (chi square = 118.963, p = .000, degrees of freedom = 66, sample size = 636), individual hospitals and year of material requested (chi square = 90.723, p = .000, degrees of freedom = 44, sample size = 636), individual hospitals and time it took to fill the request (chi square = 200.567, p = .000, degrees of freedom = 55, sample size = 636), and individual hospitals and patron making the request (chi square = 181.900, p = .000, degrees of freedom = 33, sample size = 636). Tables 8 - 11 show these chi square analyses.

The chi square analysis of the relationship between hospital and subjects shows that, percentage-wise, over half of the requests were for the preclinical sciences and medical and related issues, and for Trumbull Memorial, 80% were for those subjects. For Western Reserve, over half of their requests were for the preclinical sciences and other subjects. Over half of Summa's requests were for the preclincal sciences and fields health and medicine. For Robinson, over half of their requests included the preclincal sciences and diseases, as were St. Elizabeth's, and exactly 50% included these subjects for Timken Mercy. Woodside's only request was on fields of health and medicine, and of Salem's three requests, two were age- and sex-related fields. Barberton Citizen's top three requests were for the preclinical sciences, fields of health and medicine, and diseases, whereas Children's and Akron General's top three were preclinical sciences, fields of health and medicine, and medical and related fields.

As can be seen, most of the hospitals had the bulk of their requests in the preclinical sciences along with some other subject, and the hospitals varied on that other subject.

Over 51% of St. Elizabeth's requests were for the years 1994-5, and it had the highest

Table 8

Chi Square Analysis of the Relationship Between Hospital and Subject

Hos.	P.		H.		He.		A.		M.		D.		O.		T.	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
A.	12	**30**	0	**0**	7	**17**	4	**10**	9	**23**	7	**17**	0	**0**	39	**6**
WR.	41	**40**	0	**0**	12	**11**	8	**7**	14	**13**	11	**10**	15	**14**	101	**15**
S.	49	**35**	6	**4**	27	**19**	9	**6**	22	**15**	22	**15**	3	**2**	138	**21**
R.	7	**38**	2	**11**	1	**5**	0	**0**	2	**11**	5	**27**	1	**5**	18	**2**
W.	0	**0**	0	**0**	1	**100**	0	**0**	0	**0**	0	**0**	0	**0**	1	**.16**
Tr.	2	**40**	0	**0**	0	**0**	0	**0**	2	**40**	1	**20**	0	**0**	5	**.79**
SE.	40	**43**	6	**6**	6	**6**	7	**7**	5	**5**	20	**21**	7	**7**	91	**14**
Sa.	0	**0**	0	**0**	0	**0**	2	**66**	0	**0**	1	**33**	0	**0**	3	**.47**
BC.	6	**25**	0	**0**	6	**25**	1	**4**	2	**8**	6	**25**	3	**12**	24	**3**
C.	17	**26**	3	**4**	13	**20**	6	**9**	16	**25**	4	**6**	5	**7**	64	**10**
AG.	33	**27**	1	**.82**	26	**21**	2	**1**	25	**20**	24	**19**	11	**9**	122	**.19**
TM.	9	**30**	3	**10**	3	**10**	3	**10**	5	**16**	6	**20**	1	**3**	30	**4**

p = 0.000

Chi Square = 118.963

Degrees of Freedom = 66

Sample Size = 636

Key and notes to Table 8: Subjects: P = Preclinical Sciences, H = Human Systems, He = Fields Health and Medicine, A = Age and Sex Related Fields, M = Medical and Related Fields, D = Diseases, O = Other, T = Total. Hospitals: A = Aultman, WR = Western Reserve, S = Summa, R = Robinson, W = Woodside, Tr = Trumbull Memorial, SE = St. Elizabeth's, Sa = Salem, BC = Barberton Citizens, C = Children's, AG = Akron General, TM = Timken Mercy. The percentages are done in bold for easier viewing of the table. Because of space considerations, just the whole number percentage is included in the table without the numbers after the decimal.

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percentage of all hospitals in that time frame. Aultman's requests were spaced pretty evenly between 1992-3, 1990-1, and 1980-89, as was the focus of Children's requests, whereas Western Reserve and Robinson were somewhat higher in the 1994-5 and 1992-3 range, and over half of Summa's requests were in that range. Woodside's one request was in 1992-3. It is interesting to note that of Trumbull Memorial's five requests, two (40%) were from pre-1980. Salem's three requests were distributed between 1994-5, 1992-3, and 1980-89. Almost half of Barberton Citizen's requests were from 1992-3. Most of Akron General's were spread somewhat evenly between 1994-5, 1992-3, 1990-91, 1980-89. Timken Mercy's requests were focused on 1994-5, 1992-3 and 1980-89, pre-1980.

Table 9.

Chi Square Analysis of the Relationship Between Hospital and Year of Material Requested

Hosp.	1994-5		1992-3		1990-1		1980-89		Pre-1980		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
Aultman	1	2.56	12	30.77	10	25.64	10	25.64	4	10.26	39	6.13
West. Res.	20	19.8	29	28.71	24	23.76	18	17.82	10	9.90	101	15.88
Summa	35	25.36	45	32.61	18	13.04	22	15.94	18	13.04	138	21.70
Robinson	3	16.67	7	38.89	4	22.22	4	22.22	0	0	18	2.83
Woodside	0	0	1	100.00	0	0	0	0	0	0	1	0.16
Trumbull Mem.	0	0	2	40.00	0	0	1	20.00	2	40.00	5	0.79
St. Elizabeth	47	51.65	23	25.27	9	9.89	10	10.99	2	2.20	91	14.31
Salem	1	33.33	1	33.33	0	0	1	33.33	0	0	3	0.47
Barberton Cit.	6	25.00	11	45.83	1	4.17	5	20.83	1	4.17	24	3.77
Children's	10	15.63	17	26.56	15	23.44	16	25.00	6	9.38	64	10.06
Akron General	27	23.13	33	27.05	26	21.31	26	21.31	10	8.20	122	19.18
Timken Mercy	7	23.33	7	23.33	3	10.00	7	23.33	6	20.00	30	4.72

p = 0.000

Chi Square = 90.723

Degrees of Freedom = 44

Sample Size = 636

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Table 10.

Chi Square Analysis of the Relationship Between Hospital and Time For Request to be Filled

Hosp.	Same day		1		2-3		4-5		6-9		10+		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
A.	26	66.67	11	28.21	0	0	2	5.13	0	0	0	0	39	6.13
WR.	65	64.36	24	23.76	0	0	9	8.91	2	1.98	1	.99	101	15.88
S.	94	68.12	29	21.01	2	1.45	11	7.97	2	1.45	0	0	138	21.70
R.	12	66.67	5	27.78	0	0	1	5.56	0	0	0	0	18	2.83
W.	0	0	0	0	0	0	0	0	1	100.00	0	0	1	0.16
Tr.	3	60.00	1	20.00	0	0	1	20.00	0	0	0	0	5	0.79
SE	64	70.33	17	18.68	0	0	7	7.69	3	3.30	0	0	91	14.31
Sa	1	33.33	0	0	2	66.67	0	0	0	0	0	0	3	0.47
BC.	14	58.33	5	20.83	0	0	5	20.83	0	0	0	0	24	3.77
C.	48	75.00	13	20.31	1	1.56	2	3.13	0	0	0	0	64	10.06
AG.	75	61.48	32	26.23	2	1.64	11	9.02	1	0.82	1	0.82	122	19.18
TM.	22	73.33	5	16.67	1	3.33	2	6.67	0	0	0	0	30	4.72

p = 0.000

Chi Square = 200.567

Degrees of Freedom = 55

Sample Size = 636

Note: See key for Table 8 for hospital names.

For most of the hospitals, most of their requests were filled on the same day, and if they were not filled on the same day, they were filled within one day, although Woodside's one request was filled within 6-9 days, and of Salem's three requests, two were filled within 2-3 days

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Table 11

Chi Square Analysis of the Relationship Between Hospital and Patron Requesting Material

Hospital	Doctor		Nurse		Other		Not Identified		Total	
	f	%	f	%	f	%	f	%	f	%
Aultman	32	82.05	0	0	2	5.13	5	12.82	39	6.14
West. Res.	48	48.00	0	0	8	8.00	44	44.00	100	15.75
Summa	58	42.03	2	1.45	8	5.80	70	50.72	138	21.73
Robinson	15	83.33	1	5.56	1	5.56	1	5.56	18	2.83
Woodside	0	0	0	0	0	0	1	100.00	1	0.16
Trumbull	0	0	0	0	0	0	5	100.00	5	0.79
St. Eliz.	6	6.59	0	0	2	2.20	83	91.21	91	14.33
Salem	1	33.33	0	0	0	0	2	66.67	3	0.47
Barberton	14	58.33	0	0	0	0	10	41.67	24	3.78
Children's	10	15.63	2	3.13	5	7.81	47	73.44	64	10.08
Akron Gen.	59	48.36	1	0.82	7	5.74	55	45.08	122	19.21
Timken Mer.	16	53.33	5	16.67	0	0	9	30.00	30	4.72

p = 0.000

Chi Square = 181.900

Degrees of Freedom = 33

Sample Size = 635

Most of Aultman's and Robinson's requests came from doctors. Western Reserve, Summa, Barberton, Akron General, and Timken Mercy also had many requests from doctors, as well as personnel who were not identified. Timken Mercy had the highest percentage of nurses requesting materials, and Western Reserve had the highest percentage of "other" patrons, with Summa, Children's, Robinson, and Akron General not far behind. Woodside and Trumbull had the highest percentage of personnel not identified (100%), followed by St. Elizabeth's and Children's. Over half of Salem's and Summa's patrons were not identified, and Aultman's had the least percentage of patrons not identified (12.82%).

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V. CONCLUSIONS

This study provides information on the interlibrary loan services from the Oliver Ocasek Regional Medical Information Center (OORMIC) at the Northeastern Ohio Universities College of Medicine to its associated hospital libraries, focusing on the hospital libraries' needs and if OORMIC is meeting those needs.

As the results show, ILL requests from the hospital libraries to the OORMIC are filled in generally a short amount of time; usually one day, and all of the requests analyzed were filled on or before the day they were needed, except one (see Tables 5 and 6). In relation to time expended to fill a request, OORMIC is meeting deadlines in an exemplary manner and providing excellent service to the hospital libraries.

The top three hospitals in regards to number of requests made were the Summa Health System, Akron General Medical Center, and Western Reserve Care System. For all three hospitals, one of the top two subjects requested were preclinical sciences, which was the same for the other hospitals in the study. Seeing that preclincial sciences is the most popular subject to be requested and filled, in order to keep meeting the hospitals' need for this subject, OORMIC should ensure the continuation and currency of materials, especially journals, on these subjects.

A small number of materials requested were in the "other" category, and many of these requests were from hospital librarians for library-related materials. It may be helpful to look at the hospital libraries requesting these materials the most and provide them with a

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table of contents service so that they are kept up-to-date with all the issues covered in the library- and information science-related journals that OORMIC receives that they don't. A librarian in a hospital who is up-to-date with these issues can only benefit the hospital and result in value-added service.

As noted, journals were the most likely materials to be requested, and the focus for year of requests seemed to be 1980 - 1995, with more emphasis on 1990 - 1995. OORMIC should monitor its journal collection, as discussed above, and pay particular attention to making sure the collection is as complete as possible, especially within the past ten years.

As to patron requesting the material, unfortunately, over half were not identified on the request forms, but of the patrons that were identified, over 40% were doctors. It is important to continue to provide speedy service to doctors and all medical personnel, who usually need information quickly, as well as educate them and the hospital librarians to the possible reasons for delay in interlibrary loan service, for example, an incorrectly filled out interlibrary loan request form. If the medical staff of hospitals is aware of all services a library performs, and what the benefits and limitations of those services are, they are more likely to understand and support the library's role in the hospital.

Each hospital also seemed to have its own favorite second subject to request, as well as year of material requested, patron doing the requesting, and time it took for a request to be filled. A profile of each hospital has been compiled from these findings, as follows:

Aultman: Not a high requester. Second subject: Medical and related fields. Requested pretty evenly between 1992-3, 1990-1, 1980-89. Most requests filled on same day. Most requests from doctors

Western Reserve: A high requester. Second subject: "Other" subjects. Requests from 1994-5 and 1992-3. Most requests filled on the same day. Most requests from doctors and

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unidentified patrons; also had the highest percentage of "other" patrons.

Summa: A high requester. Second subject: Fields of health and medicine. Most requests from 1994-5 and 1992-3. Most requests filled on same day. Most requests from unidentified patrons and doctors.

Robinson Memorial: Not a high requester. Second subject: Diseases. Most requests were in 1994-5 and 1992-3. Most requests filled on same day. Most requests from doctors.

Woodside Hospital: Not a high requester. Only subject: Fields of health and medicine. Request from 1992-3. Request filled within 6-9 days. Request was from unidentified patron.

Trumbull Memorial Hospital: Not a high requester. Second subject: Medical and related issues. Most requests from 1992-3 or pre-1980. Most requests filled on same day.

St. Elizabeth's Health Center: A high requester. Second subject: Diseases. Over half of requests from 1994-5. Most requests filled on same day. Most patrons unidentified.

Salem Hospital: Not a high requester. Subjects: Age- and sex-related fields of medicine and diseases. Requests from 1994-5, 1992-3, 1980-89. Two of three requests filled within 2-3 days. Patrons were unidentified and a doctor.

Barberton Citizen's Hospital: Not a high requester. Second subjects: Fields of health and medicine and Diseases. Half of requests from 1992-3. Most requests filled on same day. Patrons were doctors or unidentified.

Children's Hospital Medical Center: A medium requester. Second subjects: Fields of health

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and Medicine and Medical and related fields. Requests were from 1992-3, 1990-1, 1980-89. Most requests filled on same day. Most patrons were not identified.

Akron General Medical Center: A high requester. Second subjects: Fields of health and medicine and Medical and related fields. Requests were from 1994-5, 1992-3, 1990-91, 1989-90. Most requests filled on same day. Most patrons were doctors or unidentified.

Timken Mercy Medical Center: Not a high requester. Second subject: Diseases. Requests were from 1994-5, 1992-3, 1980-89, and pre-1980. Most requests were filled on same day. Patrons were doctors and unidentified, and they also had the highest percentage of nurse requesting materials.

By observing these profiles one can see the needs of individual hospitals, as to who requests the most and what subject and years they are most likely to request, and anticipate them. It may be beneficial to alert hospitals with many requests in a certain subject of any new materials in that subject received by OORMIC. For the hospitals that do not request many materials, it may be helpful to determine why and make sure it is not because of OORMIC's service. For the few requests not filled within the same day or one day, perhaps it can be analyzed why and determined if it had something to do with the hospital library or OORMIC. Finally, of the hospitals with many unidentified patrons, it may be helpful for both OORMIC and the hospitals for a recommendation to indicate the name and title of the person making the request. It could make for a more complete record as well as a truer indication of who is doing the requesting, thereby having a target audience for which to provide better service.

From the results generated in this study, it appears that the interlibrary loan service that OORMIC provides to its hospital libraries is very good. In order to ensure a continuing productive partnership between OORMIC and the hospitals as well as to help foster services

that will make the hospital libraries indispensable to hospitals, the recommendations made here based on the results of this study could be a beginning point for augmenting interlibrary loan services.

Future study could focus more closely on the individual hospital libraries, thereby providing a clearer snapshot of the nuances and needs of each institution and how OORMIC can respond to those nuances and needs, as well as taking into consideration more advanced technologies, such as full-text delivery of journal articles.

APPENDIX A - Council of Associated Hospital Librarians

Names of Hospitals that are Members

Aultman Hospital
Western Reserve Care System
Summa Health System
Edwin Shaw Hospital
Robinson Memorial
Woodside Hospital
Massilon Psychiatric Center
Trumbull Memorial Hospital
St. Elizabeth Health Center
Salem Community Hospital
Barberton Citizens Hospital
Children's Hospital Medical Center at Akron
Akron General Medical Center
Timken Mercy Medical Center

Notes: NEOUCOM is also a member.

Western Reserve Care System includes the Southside and Northside facilities.

Summa Health System includes Akron City Hospital and St. Thomas Medical Center.

Timken Mercy Medical Center is in the council, but the library has had their records blocked because they do not have a professional librarian.

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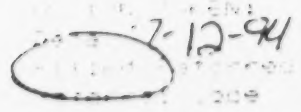
Appendix B - Sample Interlibrary Loan Form



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APPENDIX C - Coding Sheet

Name of hospital the library is at

AH - Aultman Hospital.
WR - Western Reserve Care System
SH - Summa Health System
ES - Edwin Shaw Hospital
RM - Robinson Memorial
WH - Woodside Hospital
MP - Massilon Psychiatric Center
TM - Trumbull Memorial Hospital
SE - St. Elizabeth Health Center
SC - Salem Community Hospital
BC - Barberton Citizens Hospital
CH - Children's Hospital Medical Center at Akron
AG - Akron General Medical Center
TI - Timken Mercy Medical Center

Type of material requested

1. Journal article
2. Monograph
3. Proceedings
4. Thesis
5. Government Document
6. Other

Year of material requested

1. 1994-1995
2. 1992 -1993
3. 1990- 1991
4. 1980 - 1989
5. Before 1980

Subject of material requested

1. Preclinical sciences (including anatomy, physiology, biochemistry, pharmacology, microbiology, parasitology, pathology, genetics, immunology, toxicology, drug therapy).
2. Human systems (including the muscoskeletal system, cardiovascular system, digestive system, and nervous system).
3. Fields of health and medicine (including public health, epidemiology, the health profession, practice of medicine, family medicine, nursing).
4. Age- and sex-related medical fields (gynecology and obstetrics, pediatrics, geriatrics).
5. Medical and related fields (nutrition, psychiatry, radiology, surgery, dermatology, ophthalmology, neurology, anesthesiology, sports medicine, psychology).
6. Diseases, syndromes, and conditions.
7. Other

Time it took to fill request

1. Same day
2. 1 day
3. 2 to 3 days
4. 4 to 5 days
5. 6 to 9 days
6. 10 or more days

Filled on or before day it was needed

1. Yes
2. No

Type of patron requesting material

1. Doctor
2. Nurse
3. Other
4. Title not identified

NATIONAL INSTITUTES OF HEALTH
NATIONAL LIBRARY OF MEDICINE

Appendix D - NLM Classification

FACT SHEET

A World of Knowledge for the Nation's Health

January 1995

NLM CLASSIFICATION

The **National Library of Medicine Classification** covers the field of medicine and related sciences. The scheme is a system of classification intended to be used for the shelf arrangement of all library materials, regardless of format. Designed as a broad classification, it is suitable for both large and small library collections and may be adapted to handle specialized collections of any size.

The **NLM Classification** is a system of mixed notation patterned after the **Library of Congress (LC) Classification** where alphabetical letters which denote broad subject categories are further subdivided by numbers. The **NLM Classification** utilizes schedules QS-QZ and W-WZ, permanently excluded from the **LC Classification Schedules** and is intended to be used with the LC schedules which supplement the **NLM Classification** for subjects bordering on medicine and for general reference materials. The LC schedules for Human Anatomy (QM), Microbiology (QR), and Medicine (R) are not used at all by the National Library of Medicine since they overlap the **NLM Classification.**

OUTLINE OF NLM CLASSIFICATION

Preclinical Sciences:

QS	Human Anatomy
QT	Physiology
QU	Biochemistry
QV	Pharmacology
QW	Microbiology and Immunology
QX	Parasitology
QY	Clinical Pathology
QZ	Pathology

Medicine and Related Subjects:

W	Health Professions
WA	Public Health
WB	Practice of Medicine
WC	Communicable Diseases
WD 100	Nutrition Disorders
WD 200	Metabolic Diseases
WD 300	Immunologic and Collagen Diseases. Hypersensitivity
WD 400	Animal Poisons
WD 500	Plant Poisons
WD 600	Diseases and Injuries Caused by Physical Agents
WD 700	Aviation and Space Medicine
WE	Musculoskeletal System
WF	Respiratory System
WG	Cardiovascular System
WH	Hemic and Lymphatic Systems
WI	Digestive System
WJ	Urogenital System
WK	Endocrine System
WL	Nervous System
WM	Psychiatry
WN	Radiology. Diagnostic Imaging
WO	Surgery
WP	Gynecology
WQ	Obstetrics
WR	Dermatology
WS	Pediatrics
WT	Geriatrics. Chronic Disease
WU	Dentistry. Oral Surgery
WV	Otolaryngology
WW	Ophthalmology
WX	Hospitals and Other Health Facilities
WY	Nursing
WZ	History of Medicine
19th Century Schedule	

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES · Public Health Service · National Institutes of Health
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END NOTES

[1]"Merger Frenzy Feeds Staffing Cuts; Chains Gain Ground in Many States," American Journal of Nursing 94, no. 12 (December 1994): 63, 65.

[2]Diane Lore and Glenn Gamboa, "Hospital Chain Wants Blues," The Akron Beacon Journal, 30 March 1996, A1, A4.

[3]Ibid.

[4]Patricia Nornhold, "Hospital Restructuring: How to Cope with the Changes," Nursing (September 1994) : 47.

[5]Ibid.

[6]Richard B. Friedman, "The Future of Medical Information and Medical Libraries," Bulletin of the New York Academy of Medicine 61, no. 3 (April 1985): 290.

[7]Ibid.

[8]Nornhold, 48

[9]West Suburban Hospital Association, Consortium for Information Resources, Dynamics of Hospital Library Consortia (Waltham, MA: West Suburban Hospital Research and Education Association, 1975), 3.

[10]Joanne Lavine Silverstein, "Strengthening the Links Between Health Sciences Information Users and Providers," Bulletin of the Medical Library Association 83, no. 4 (October 1995) : 412.

[11]Ibid., 413.

[12]Ibid.

[13]Susan E. Hill, Examining the Role of Interlibrary Loan," Medical Reference Services Quarterly 5, no. 4 (Winter 1996) : 41.

[14]Prudence Ward Dalrymple et al., "Measuring Statewide Interlibrary Loan Among Multitype Libraries: A Testing of Data Collection Approaches," RQ 30, no. 4 (Summer 1991) 543.

[15]Eve-Marie Lacroix and Gale A. Dutcher, "A Comparison of Interlibrary Loan Requests Received by the National Library of Medicine: 1959 and 1984," Bulletin of the Medical Library Association 75, no. 1 (January 1987) : 13.

[16]Ibid.

[17]Eve-Marie LaCroix and Gale A. Dutcher, "Impact of DOCLINE on Interlibrary Loan Service at the National Library of Medicine," Bulletin of the Medical Library Association 77, no. 1 (January 1989) : 42.

[18]Ibid.; 44.

[19]Ibid., 46.

[20]Ibid., 47.

[21]Ans Bleeker et al, "Analysis of External and Internal Interlibrary Loan Requests: Aid in Collection Management," Bulletin of the Medical Library Association 78, no. 4 (October 1990) : 345.

[22]Ibid., 348.

[23]Irene Lovas, Elaine Graham, and Virginia Flack, "Health Professionals' Use of Documents Obtained Through the Regional Medical Library Network," Bulletin of the Medical Library Association 79, no. 1 (January 1991) : 28.

[24]Ibid., 30-32.

[25]Ibid., 34.

[26]Ibid., 35.

[27]Eve-Marie Lacroix, "Interlibrary Loan in U.S. Health Sciences Libraries: Journal Article Use," Bulletin of the Medical Library Association 82, no. 4 (October 1994) : 363.

[28]Ibid., 365.

[29]Ibid., 366.

[30]Ibid.

[31]Ibid., 367.

[32]Ibid., 368.

[33]Prudence Ward Dalrymple et al., 535.

[34]Ibid., 537.

[35]Ibid., 543.

[36]Ibid.

[37]Norman D. Stevens, "Library Networks and Resource Sharing in the United States: An Historical and Philosophical Overview," Journal of the American Society for Information Science (November 1980): 405.

[38]Ibid., 406.

[39]Ibid., 408, citing National Commission on Libraries and Information Science, Task Force on a National Periodicals System, Effective Access to the Periodical Literature: a National Program (Washington, D.C.: U.S. Government Printing Office, 1977) and A Comparative Evaluation of Alternative Systems for the Provision of Effective Access to Periodical Literature (Washington, D.C.: National Commission on Libraries and Information Science, 1979).

[40]Ibid., 409.

[41]Ibid., 411.

[42]Danuta A. Nitecki, "Impact of an Online Circulation System on Interlibrary Services," Special Libraries 73, no. 1 (January 1982): 11.

[43]Paul W. Kittle and Kathleen M. Puffer, "Multitype Library Networks--Are they Simply a Vehicle for Resource Rape by Net borrowers?" Online 10, no. 4 (July 1986): 7.

[44]Ibid., 8.

[45]Charles B. Lowry, "Resource Sharing or Cost Shifting?--The Unequal Burden of Cooperative Cataloging and ILL in Network," College and Research Libraries (January 1990): 12.

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[46]Ibid.

[47]Ibid., 13.

[48]Ibid., 14.

[49]Ibid., 17.

[50]Ibid.

[51]Thomas H. Ballard, "The Unfulfilled Promise of Resource Sharing," American Libraries 289 (November 1990) : 992.

[52]Ibid.

[53]Marsha Ra, "The Future of Resource Sharing: Is There Any?" Computers in Libraries 11 (February 1991) : 25.

[54]Ibid., 26.

[55]Ibid.

[56]Mary E. Jackson, "Resource Sharing and Document Delivery in the 1990s--Introduction," Wilson Library Bulletin 66 (February 1993) : 35.

[57]Ibid., 36.

[58]Ibid., 110.

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